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| <b>14. ABSTRACT</b><br><br>The primary objective of this research was to integrate new tactics of whole-person assessment developed from basic research, along with findings from applied research, for occupational selection and classification. A secondary objective was to provide assessment of the independent and interactive contributions of cognitive (aptitude), affective, and conative trait measures. Two empirical studies provided initial evidence for the validity and reliability of context-specific trait measures and their incremental predictive validity, beyond that of cognitive abilities, for training outcomes. |                    |                                                 |                                   |                                                                     |                                                                  |
| <b>15. SUBJECT TERMS</b><br>personnel selection, classification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                    |                                                 |                                   |                                                                     |                                                                  |
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| <b>a. REPORT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>b. ABSTRACT</b> | <b>c. THIS PAGE</b>                             |                                   |                                                                     | <b>19b. TELEPHONE NUMBER (include area code)</b><br>404-894-5674 |

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## FINAL TECHNICAL REPORT

PRINCIPAL INVESTIGATOR: Ruth Kanfer (e-mail: rk64@prism.gatech.edu)

INSTITUTION: Georgia Institute of Technology

TITLE: Integrating Non-Ability and Cognitive Assessments: Selection and Classification

AWARD PERIOD: 26 November 2001 – 30 April 2003

OBJECTIVE: To refine and test a whole-person approach to selection and classification when integrated with extant aptitude assessments, and to provide a proof-of-concept that extending the predictor space can result in significant incremental validity for selection and classification, which in turn may lead to higher retention rates and higher organizational effectiveness. A secondary objective is to provide assessment of the independent and interactive contributions of cognitive (aptitude), affective, and conative trait measures.

APPROACH: The approach involves assessment of individual differences on a set of critical "trait complexes" – groups of traits that are mutually supportive or impeding for general learning and skill acquisition, and that are differentially associated with job knowledge in different specialty areas (e.g., engineering, human resource specialist). The measures include self-concept, personality, motivational traits, and occupational interests. In addition, an extensive battery of cognitive ability measures will be administered (for evaluation of incremental predictive validity). Individuals who are representative of Navy demographics and occupational classifications will be sampled from local schools. Regression models, factor analyses, and discriminant functions will be used to evaluate the concurrent and predictive validity for training success and occupational performance.

ACCOMPLISHMENTS (throughout award period): A non-ability trait complex battery was developed and evaluated in an empirical study investigating criterion-related validity of the battery and cognitive abilities for training outcomes (e.g., grades). Two hundred and fifty eight students, selected for technical occupational specialties, completed the integrated assessment battery. Data obtained were evaluated in the context of both the general ability framework and the separable ability framework. As expected, the findings showed that both cognitive ability and non-ability trait complexes showed both convergent and discriminant validity for key outcome variables (e.g., grades, domain knowledge). Comparison of the unitary and separable ability frameworks indicated the incremental validity of the separable framework. Factor-analytic results obtained in analyses of the non-ability trait complexes battery indicated four primary factors: (1) Math/Science, (2) Verbal, (3) Intrinsic Achievement, and (4) Extrinsic Achievement. These results replicate prior work on ability-trait relations and extend the nomological network of constructs to encompass the affective-conative domain. Analyses of factor

relations with ability complexes, gender, and grades showed the expected pattern of convergent and discriminant relations. Gender was significantly related to cognitive abilities and knowledge measures, but was unrelated to the conative complex factors. Grades were significantly related to the intrinsic achievement trait complex, but were unrelated to the extrinsic achievement complex. Modifications of the integrated battery were undertaken based on the results, and a second study was implemented to investigate the validity of the integrated battery for on-the-job performance. One hundred and five students enrolled in a cooperative education program for selected occupational specialties completed the revised integrated battery. Academic performance outcomes were obtained from archival data. Job performance outcomes were assessed by having the participant's supervisor complete a performance evaluation measure. Complete supervisory ratings data were obtained for 81 percent of participants. Data collection was completed and analyses are currently underway. Results are expected to extend further criterion-related validity for the affective-conative portion of the battery to job performance. Findings are also anticipated to show differential pattern of ability relations between training and job performance outcomes.

CONCLUSIONS: The research extends current knowledge on the role of non-ability predictors by investigating the incremental predictive validity of non-ability trait complexes, beyond that of both general cognitive ability and component measures of cognitive abilities, and by evaluating the differential validity of specific trait complexes for distinct Navy-relevant occupational categories (e.g., computer programmer, engineer). The results obtained provide support for the use of mid-level assessment of affective and conative traits and the significant incremental validity of these trait complexes for technical training outcomes, and potentially job performance.

SIGNIFICANCE: Our studies have provided information for enhancing both the selection of individuals in order to maximize the overall effectiveness of the organization and the fit between individual and job/task characteristics using a whole-person approach that integrates extant aptitude assessments with individual traits. These findings provide a springboard for development of integrated selection and classification measures with Navy personnel.

PATENT INFORMATION: NA

AWARD INFORMATION:

Recipient of International Society for the Study of Individual Differences Best Paper Award (2001), Edinburgh, Scotland.

Invited Keynote Address, British Psychological Society, Organizational Psychology Annual Meeting (2003), Bournemouth, England.

REFEREED PUBLICATIONS (for total award period):

1. Kanfer, R. (2001). I/O Psychology: Working at the basic-applied psychology interface. *Applied Psychology: An International Review*, 235-240.
2. Kanfer, R., Wanberg, C., & Kantrowitz, T. M. (2001). Job search and employment: A personality-motivational analysis and meta-analytic review. *Journal of Applied Psychology*, 86, 837- 855.
3. Ackerman, P. L., Bowen, K. R., Beier, M. E., & Kanfer, R. (2001). Determinants of individual differences and gender differences in knowledge. *Journal of Educational Psychology*, 93, 797-825.
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6. Kanfer, R., & Ackerman, P. L. (In Press). Aging, adult development and work motivation. *Academy of Management Review*.

**BOOK CHAPTERS, SUBMISSIONS, ABSTRACTS AND OTHER PUBLICATIONS**  
(for total award period)

1. Kanfer, R. (2001). Motivation and self-regulation: A trait-skill conceptualization. In *Bericht über den 42. Kongress der Deutschen Gesellschaft für Psychologie in Jena 2000*. Berlin, Germany: Pabst Science Publishers.
2. Kanfer, R., & Kantrowitz, T. M. (2002). Ability and non-ability predictors of performance. In S. Sonnentag (Ed.), *Psychological Management of Individual Performance: A Handbook in the Psychology of Management in Organizations* (pp. 27-50) England: John Wiley & Sons, Ltd.
3. Kanfer, R., and Kantrowitz, T. M. (2002). Emotion regulation: Command and Control of emotions in work life. In R. Lord, R. Klimoski, & R. Kanfer (Eds.), *Emotions in the Workplace: Understanding the Structure and Role of Emotions in Organizational Behavior* (PP. 443-472). San Francisco, CA: Jossey- Bass.
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5. Kanfer, R., & Klimoski, R. (2002). Workplace emotions: Looking back to the future. In R. Lord, R. Klimoski, & R. Kanfer (Eds.), *Emotions in the Workplace: Understanding*

*the Structure and Role of Emotions in Organizational Behavior* (pp. 473-490). San Francisco, CA: Jossey- Bass.

6. Heggestad, E. D., & Kanfer, R., (Under Revision). Assessing the predictive validity of self-efficacy for performance in training: A matter of analytic method or something more?

7. Kanfer, R., & Ackerman, P. L. (In Progress). Determinants and processes of workplace motivation and competence: A developmental, person-centered perspective. In A. Elliott & C. Dweck (Eds.), *Handbook of competence and motivation*. New York: Guilford Press.